

Although, like the briefer work of Jørgensen on the same subject, this book deals particularly with the malting and brewing industries, it will find an important place in many laboratories, both as a complement to the textbooks which treat the chemical side of fermentation and as a systematic reference book.—MARY HEFFERAN.

#### Ferns.

THIS ELEGANT VOLUME<sup>3</sup> is intended primarily for amateurs and consequently is as free as possible from technicalities. An analytical key based upon the stalks is a principal feature of the book. In this key, the number of vascular bundles appearing in a transverse section of the stalk is the most important character. The chief divisions are those in which the cross section shows one, two, three, four, five, and more than five bundles, respectively. Other stem characters, such as the grooves, ridges, and color are prominent. There is also a key based upon the fructification. All the ferns of the north-eastern states are figured and described, there being more than three hundred photographs, all of which are original. The photographs of sori, most of which are taken at a magnification of 5.5 diameters, are exceptionally fine and will be valuable not only to the amateur who is learning to identify ferns, but also to the teacher, who will find them useful in demonstration. In photographing the sori, a camera with a bellows extension of twenty-four inches was used, and the focal length of the lens was reduced by slipping over it a cheap copying and enlarging lens, thus giving the desired magnification.

While the book is addressed to amateurs and is written in popular style the author's acquaintance with ferns in the field, together with the peculiar key and excellent illustrations, will make it useful to the experienced botanist.—C. J. CHAMBERLAIN.

#### MINOR NOTICES.

PART 17 of Engler's *Das Pflanzenreich*, a volume of 326 pages, treats the Lythraceae by E. Koehne.<sup>4</sup>

GREEN<sup>5</sup> has revised his *Forestry in Minnesota*<sup>6</sup> and made it more applicable for general use. A very valuable part of the volume is a tabular classification of what is known of the silvicultural habit and uses of the

<sup>3</sup> WATERS, CAMPBELL E., *Ferns*, a manual for the northeastern states, with analytical keys based on the stalks and on the fructification. 8vo. pp. ix + 362. Illustrated, New York: Henry Holt & Co. 1903. \$3.

<sup>4</sup> ENGLER, A., *Das Pflanzenreich. Regni vegetabilis conspectus. Heft 17. Lythraceae*: E. Koehne. 8vo. pp. 326. *figs.* 59. Leipzig: Wilhelm Engelmann. 1903. *M* 16.40.

<sup>5</sup> GREEN, H. C., *Principles of American forestry*. 12 mo. pp. xiii + 334. *figs.* 73. New York: John Wiley & Sons. 1903. \$1.50.

<sup>6</sup> BOT. GAZ. 34: 455. 1902.

important American timber trees. This will be much appreciated by students of forestry.—H. N. WHITFORD.

IN A VERY attractive volume Snow<sup>7</sup> discusses the species and properties of a large number of native and foreign species of wood. A valuable feature of the book is the half-tone reproduction of photographs of trees, bark, and wood of many species, usually one plate for each genus that is treated. The work is an untechnical presentation of the subject. It would have been wise to substitute modern terms for "exogenous" and "endogenous" in the text.—H. N. WHITFORD.

#### NOTES FOR STUDENTS.

SCHMIED reports<sup>8</sup> a carotin dissolved in oil in the periderm of the roots of *Dracaena reflexa*, which is identical in many respects (not in all), with the carotin of *Daucus*.

IN A WORKING PLAN for some forest lands in South Carolina Sherrard<sup>9</sup> gives data concerning the silvicultural habits of the southern pines in this state.—H. N. WHITFORD.

SCHWARZ<sup>10</sup> thinks the diminished flow of the Rock River is due to the deforestation of large tracts of land in its basin. Cultivated lands and wood lots have been largely converted to pasturage, thus interfering with waterflow. He advises a more careful treatment of the present forest and its enlargement where it will not interfere with land more valuable for agricultural purposes.—H. N. WHITFORD.

CHARPENTIER<sup>11</sup> finds that the green alga, *Cystococcus humicola*, grows luxuriantly in solutions, the air above which is lacking in CO<sub>2</sub>. The necessary carbon in such cases may be taken from glucose. The green color may develop in the dark, though growth is less rapid in this condition. When required to depend upon atmospheric CO<sub>2</sub> as a source of carbon, the growth of *Cystococcus* is very slow.—H. C. COWLES.

A REPORT of the Bureau of Forestry of the Philippine Islands<sup>12</sup> contains

<sup>7</sup> SNOW, H. C. The principal species of wood; their characteristic properties. 8vo. pp. xi + 203. pls. 39. figs. 4. New York: John Wiley & Son. 1903. \$3.50.

<sup>8</sup> SCHMIED, H., Ueber Carotin in den Wurzeln von *Dracaena* und anderen Liliaceen Oesterr. bot. Zeits. 53: 313-317. 1903.

<sup>9</sup> SHERRARD, T. H., A working plan for forest lands in Hampton and Beaufort counties, South Carolina. Bull. no. 43, Bureau of Forestry, U. S. Dept. of Agric. pp. 54. pls. 12. figs. 11. 1 map. 1903.

<sup>10</sup> SCHWARZ, G. F., The diminished flow of the Rock River in Wisconsin and Illinois, and its relation to the surrounding forests. Bull. no. 44, Bureau of Forestry, U. S. Dept. of Agric. pp. 27. pls. 6. 2 maps. 1903.

<sup>11</sup> CHARPENTIER, P. G., Sur l'assimilation du carbone par une algue vertue. Compt. Rend. 134: 671-673. 1902.

<sup>12</sup> REPORT of the Bureau of Forestry of the Philippine Islands from July 1, 1901, to September 1902. pp. 451-527. Report of the Philippine Commission.